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17
SENATE

REPORT
99-325

ORIGINAL

AUTHORIZING APPROPRIATIONS FOR THE NATIONAL SCIENCE FOUNDATION FOR FISCAL YEAR 1987

JUNE 19 (legislative day, JUNE 16), 1986.—Ordered to be printed

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Mr. HATCH, from the Committee on Labor and Human Resources, submitted the following

REPORT

[To accompany S. 2184]

The Committee on Labor and Human Resources to which was referred the bill (S. 2184) having considered the same, reports favorably thereon with an amendment and recommends that the bill as amended do pass.

I. BRIEF SUMMARY

The bill authorizes appropriations for the National Science Foundaton for fiscal year 1987 in the following categories and amounts:

Mathematical and Physical Sciences	$489,870,000
Engineering	172,470,000
Biological, Behavioral, and Social Sciences	270,500,000
Geosciences	298,150,000
Scientific, Technological, and International Affairs	47,030,000
Computer and Information Science and Engineering	122,980,000
Program Development and Management	78,000,000
United States Antarctic Program	117,000,000
Science and Engineering Education	89,000,000
Special Foreign Currency	700,000
Total	1,685,700,000

II. SECTION-BY-SECTION SUMMARY

Section 2 authorizes specific levels of funding for each of NSF's research and education activities for FY 1987.

Section 3 stipulates that appropriations made for research, education, and special foreign currency programs can be obligated throughout the period specified in the appropriations act.

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Section 4 limits the amount which can be spent on official consultation, representation, etc., to $5,000. Such expenditures are made at the discretion of the Director.

Section 5 authorizes NSF to draw $700,000 in foreign currencies for NSF expenses incurred outside the United States.

Section 6(a) authorizes the Director to transfer funds between directorates provided that the addition or reduction of funds is not greater than 10 percent.

Section 6(b) requires the Director to notify the Senate Labor and Human Resources and Commerce, Science, and Transportation Committees and the House Science and Technology Committee if a proposed transfer is in excess of 10 percent, and may effect the transfer after 30 days of such notification, assuming there is no objection.

Section 6(c) requires the Director to transfer $4 million to the Science and Engineering Education Directorate for the College Science Instrumentation Program and $3 million to the Biological and Behavioral Sciences Directorate for behavioral and social sciences programs.

Section 7 makes several changes to the National Science Foundation Organic Act of 1950.

Section 8 establishes a three-year interagency task force on women, minorities, and the handicapped in science and technology.

Section 9 repeals Title IX of the National Defense Education Act of 1959.

III. Hearing

The Committee on Labor and Human Resources held a public hearing on March 26, 1986, to consider S. 2184. The following persons and organizations presented testimony for the record:

Mr. Erich Bloch, Director of the National Science Foundation.

Mr. Roland W. Schmitt, Chairman of the National Science Board.

Mr. Jon W. Fuller, President of the Great Lakes Colleges Association, also on behalf of the Associated Colleges of the Midwest.

Dr. Leonard D. Goodstein Executive Officer of the American Psychological Association.

Dr. David A. Hamburg, President of the American Association for the Advancement of Science.

Dr. David Jenness, Executive Director of the Consortium of Social Science Associations.

Dr. Robert M. Rosenzweig, President of the Association of American Universities, also on behalf of the American Council on Education, the National Association of State Universities and Land-Grant Colleges, the Association of Graduate Schools, and the Council of Graduate Schools in the United States.

Engineering Education Task Force of the National Society of Professional Engineers, the American Society for Engineering Education, and the National Association of State Universities and Land-Grant Colleges.

Federation of Behavioral, Psychological and Cognitive Sciences.

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IV. NSF Functions and Mandate

The National Science Foundation (NSF) is an independent federal agency established by the National Science Foundation Act of 1950 (P.L. 81-507) to promote and advance scientific progress in the United States. The concept of a National Science Foundation was an outgrowth of the important contributions made by science and technology during the Second World War. Since its establishment in 1950, NSF has occupied a unique place among federal government agencies, with responsibility for the overall health of science across all disciplines, in contrast to other agencies that support research directed to specific missions.

NSF maintains U.S. scientific strength by funding research in all fields of science and engineering through grants and contracts to more than 2,000 colleges and universities and other research institutions in all parts of the United States. The Foundation accounts for about 28 percent of federal support for basin research going to academic institutions.

NSF receives over 27,000 unsolicited proposals each year for research and graduate fellowships and makes over 12,000 awards. The awards go to universities, colleges, university consortia, not-for-profit institutions, and small businesses. NSF operates no in-house laboratories, but does support the operation of National Research Centers, oceanographic research vessels, and Antarctic research stations. The Foundation also supports cooperative research efforts by universities and industry and U.S. participation in mutually beneficial programs of international scientific cooperation. Except for administration costs, funds appropriated to the Foundation by the Congress go to non-federal research and science education activities.

Foundation staff is assisted by formal advisory communities and ad hoc reviewers of research proposals. This advisory system, which provides advice both on program direction and on specific proposals, involves more than 50,000 scientists and engineers each year. NSF staff members—who are experts in science or engineering—make final award decisions. Applicants receive verbatim unsigned copies of peer reviews and can appeal award decisions through a formal mechanism.

A 25-member National Science Board establishes policies for the Foundation, within the framework of applicable policies made by the President and the Congress. The Board, the Director of the Foundation, the Deputy Director, and four Assistant Directors are appointed by the President with the advice and consent of the Senate; three additional Assistant Directors are appointed by the Director.

By establishing NSF in 1950, the Congress recognized that support of long-term fundamental research in all fields of science and engineering and the teaching and learning of science contribute to the strength and well-being of the nation in many ways. Research discoveries precede and underlie advances in many important areas of federal responsibility, including national defense, economic growth, health, energy, environment, and agriculture. Scientists and engineers help to create the future by developing new knowledge, ideas, techniques, and applications—and new generations of

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scientists are educated through their work as graduate students on research projects.

V. Program Description and Committee Views

The Committee recommends an authorization of $1,685,700,000 for FY 1987. This is an increase of $130 million or 8.4 percent over the pre-Gramm-Rudman-Hollings program plan. This is the same level of funding requested by the Administration in its February budget submission and is consistent with the Senate-passed budget resolution.

Despite the critical need to reduce domestic spending, the Committee believes that scientific and engineering research, as well as improvement in science and mathematics education, are essential for our nation's long term economic health and national security. The Committee recognizes that we have increasingly turned to science and engineering to address national problems in medicine, energy and environment, communications, and manufacturing. In view of this, it is equally important to increase the nation's base of fundamental scientific knowledge, without which advancements in technology cannot go forward. This is the main mission of the National Science Foundation.

A. Mathematical and Physical Science (MPS).—The Committee recommends $489,870,000 for fiscal year 1987. This represents an increase of $55.3 million over the level established by the 1986 sequester order. The FY 1987 program maintains the research base across the MPB disciplines, provides for instrumentation and operation of major facilities, and maintains the number and size of individual investigator research awards. Support for graduate students and postdoctoral students is also sustained.

The Committee supports the emphasis proposed for the mathematical sciences. This is in partial response to the recommendations of the recent report from the National Research Council entitled "Renewing U.S. Mathematics: Critical Resource for the Future" and the subsequent National Science Board resolution on the need to bolster resources for the mathematical sciences. The central role of the mathematical sciences in the computational approach to science and engineering accounts for the remainder of the increase.

In chemistry, increased support for shared instrumentation and participation in the biotechnology initiative is provided. In physics, development and improvement of instruments and facilities will be emphasized. Further planning studies for a gravitational wave detector system will be supported along with continued support for the Cornell Electron Storage Ring, the Indiana University Cooler Ring, and the Michigan State University Superconducting Cyclotron. In materials research, strong support is provided for growth of the materials research group program. The Committee also supports the astronomical sciences budget request which provides support for individual projects, the national astronomy centers, and the high priority Very Long Baseline Array radio telescope now under construction. The Astronomical Sciences Division was recently transferred to the MPS Directorate from the directorate for-

merly known as Astronomical, Atmospheric, Earth, and Ocean Sciences, now the Geosciences Directorate.

B. Engineering (ENG).—The Committee recommends a total of $172,470,000, an amount equal to the President's request. This is $28.3 million over the current year level.

The programs with the Directorate are designed to achieve several complementary goals. To maintain strength in established "Science-driven" fields, such as materials and chemical engineering, research is supported to advance knowledge of engineering principles, methodologies, and systems that provide the basis for technological advances. In "technology-drive" areas that lack strong science bases, such as manufacturing and research, support is provided to create a base of engineering science knowledge. Other programs build strong engineering knowledge bases and academic infrastructure in key emerging areas such as biotechnology. Links are established between engineering schools, industry, and government laboratories through many of the directorate's programs.

To help improve national economic competitiveness in FY 1987, NSF will expand the Engineering Research Centers program initiated in FY 1985, provide enhanced support for research in selected fields with high potential for economic payoff such as computer science and biotechnology, and encourage innovation through support of research conducted by small businesses and joint industry—university research ventures. The interdisciplinary Engineering Research Center program (ERC) and related programs focus on critical areas that can benefit from an infusion of multidisciplinary knowledge.

C. Biological, Behavioral, and Social Sciences (BBS).—The Committee recommends the budget request of $270,500,000. This is $31.8 million more than the current level established by the 1986 sequester.

The base program will provide funds for both instrumentation and personnel necessary for the effective conduct of research in all the research areas supported by BBS. The size and number of individual investigator awards will be sustained. Changes in the use and role of scientific instrumentation in BBS research fields will be met through a special emphasis on equipment support and instrument development. Upgrading biological field stations, and expanding large scale data bases of protein and nucleic acid sequences are additional areas of emphasis within this effort. BBS plays a dual role in the NSF's emphasis on research related to biotechnology. BBS has general management and monitoring responsibility for the agency-wide effort, and its programs support a significant portion of such research. Efforts focus on establishing interdisciplinary groups, making critical instrumentation available, and developing a stronger research base in such areas as genetics and biochemistry.

There is also growing emphasis on developing the scientific information base on microbial ecology and ecosystems. These data provide essential baseline information for risk assessment analysis for policy decisions. In addition, support will be continued for large social science data base projects such as the Panel Study on Income Dynamics.

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The Committee has also included language in the bill that provides, from funds available, an additional $3 million above the budget request, for additional research in behavioral and social science.

D. Geosciences (GEO).—The Committee recommends a total authorization of $298,150,000 for Geosciences in FY 1987, an increase of $31.8 million over the FY 1986 estimate.

The Directorate for Geosciences (GEO), established in April 1986, includes the atmospheric, earth and ocean sciences programs that were formerly organized under the Directorate for Astronomical, Atmospheric, Earth and Ocean Sciences (AAEO). Activities being proposed by NSF are part of a major international effort to understand natural phenomena that can have a profound impact on the public welfare and economic conditions of the nations of the world. Increased understanding of the planet's processes can lead to more reliable prediction of natural events such as the El Nino oceanic/atmospheric phenomenon, and earthquakes and volcanic eruptions, as well as the consequences of human activity, such as acid rain and deforestation.

E. Scientific, Technological, and International Affairs.—The Committee recommends $47,030,000 for this activity, an increase of $9.1 million over FY 1986 post-Gramm-Rudman levels.

The primary objective of STIA programs is to collect, analyze, and disseminate science and engineering resource data with key national policy-makers and the public as well as to develop cooperative international linkages, and expand research opportunities for women, minorities and handicapped scientists and engineers.

The Committee is pleased to note the establishment of Minority Research Centers of Excellence. This program will provide incentives for a selected group of minority institutions to design and implement long-range plans to upgrade research and training capabilities in science and engineering.

In addition, STIA provides opportunities for small, technology-oriented firms to participate in NSF-supported research through the Small Business Innovation Research Program.

F. Computer and Information Science and Engineering (CISE).—The Committee recommends $122,980,000 for FY 1987; this is $22.5 million more than the 1986 estimate.

The Directorate for Computer and Information Science and Engineering (CISE) was also established in April 1986. The need for this organizational entity is the result of the Foundation's extensive activity in computer science, information science, computer engineering, supercomputers, and computer networking. The following existing programs and activities are combined to form the new directorate: computer research; information science and technology; advanced scientific computing; computer engineering; and communications systems and signal processing.

The major emphasis in computer research will be support for research on advanced computer concepts and systems. This includes advanced computer architectures, software issues arising from new computer architectures, and information structures, cognition and formal languages. The information science and technology activity will emphasize research underlying advanced knowledge retrieval and manipulation systems and data resources for studies of the ef-

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fects of information and computer technology in the workplace, and on industry structure and performance.

In the area of advanced scientific computing (supercomputers) strong support will be continued for the Phase II centers while reduced levels will be maintained for the Phase I or resource centers. In FY 1987, NSF should support only those Phase I resource centers that provide services not readily available at the national centers. The Committee is concerned that networking activities be maintained and expanded to the extent possible. The program will also provide support for new technologies, innovative software, numerical methods and graphical techniques.

G. Program Development and Management (PD&M).—The Committee recommends $78.0 million for this activity. This is $6.1 million more than the current level established by the 1986 sequester order.

This authorization provides support for staff salaries, rent, travel, and other operating expenses necessary for the effective and efficient operations and management of the Foundation. The Committee notes that the proportion of the total resources used by NSF for administration is less than 5% and that the 1987 staff in level is held at the 1986 level. The Committee is supportive of the Foundation's progress in expanding automation capability and related technologies, and improving administration and programmatic systems such as financial accounting, reviewer, budget line item program, and other more advanced systems. The Committee encourages NSF to continue to move ahead in these areas.

H. United States Antarctic Program (USAP).—The Committee recommends $117,000,000 for this activity in FY 1987. This is $6.8 million more than the current level established by the 1986 sequester order.

United States policy calls for the maintenance of an active and influential presence in Antarctica. Scientific research is the principal expression of this presence, and the National Science Foundation has been charged by the President with responsibility for fully funding and managing the nation's program.

For fiscal year 1987 the following topics have been identified as research priorities: (1) Aerosols, trace gases, troposphere-stratosphere exchange processes, and major variations in the ozone shield over Antarctica. (2) The structure of the antarctic marine ecosystem and its relationship to the nutrient rich ice edge zone. (3) The geologic history, structure and tectonics of the Transantarctic Mountains and West Antarctica that relate both to resource and paleoclimate questions. (4) Increased studies of the dynamics of the West Antarctic ice sheet, and the clarification and extension of the climate record gained from ice drilling and coring. (5) The formation and flow of cold, nutrient-rich bottomwater phenomena that have implications both for marine ecosystems and weather and climate.

While NSF has the responsibility for funding and managing the entire program, the Departments of Defense and Transportation provide, on a reimbursable basis, requested logistic and other operational support. The Foundation also employs a contractor to maintain and operate South Pole, Palmer, and Siple Stations as well as a chartered research ship, *Polar Duke.* The Navy operates

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McMurdo Station, the NSF-owned LC-130 aircraft, and Navy helicopters.

In FY 1987, the Coast Guard will reassume the fixed cost of icebreakers, implemented by a budget base transfer of $14 million. As a result of this transfer, NSF is now able to implement a series of critical investments vital to the program and to the safety of scientific and technical personnel.

Upgrading to extend the service life of the program's two oldest aircraft, built in the 1950's, was postponed from 1977 until 1983, when they were declared unsafe to operate due to failures in communications and navigation electronics. They are now undergoing the minimal work necessary to allow them to fly this season, but require more substantial work to remain serviceable in the years ahead.

The program's other five planes need improvements as well. Rather than being equipped with solid state electronics, for example, they still employ vacuum tubes, which are very sensitive to severe temperature extremes, rough landing and other conditions typical of the harsh Antarctic environment. Communications play such an important role in the extreme weather that safety requires this equipment to be replaced and modernized.

The Committee also supports the Foundation's plans to begin a critical upgrading of the laboratory facilities and equipment, which are currently inadequate.

I. Science and Engineering Education (SEE).—The Committee recommends $89,000,000 for this activity in FY 1987. This is $4.4 million more than the current level following the 1986 sequester order.

This Committee has been a long and consistent advocate of the Foundation's efforts with respect to science and engineering education. The Committee has been concerned by the crisis in precollege science education and expressed its concern by enacting the Education for Economic Security Act in 1984. This comprehensive math-science education legislation, which established programs for both the NSF and the Department of Education, was reauthorized last year.

The Committee remains very concerned about the state of science literacy in our country, and continues to support NSF projects such as National Science Week which are designed to promote greater interest in science and technology. In particular, the Committee believes that education at the precollege level should include instruction in the basic scientific principles involved in problem-solving and an introduction to the world of technology and engineering. The Foundation may interpret Title I of the Education for Economic Security Act broadly to allow grants for meritorious projects which contribute to our young people's understanding of technology, including projects which may utilize hands-on demonstrations and experimentation.

The Committee also directs the Director of the National Science Foundation to increase support for the College Science Instrumentation Program (CSIP) within the Directorate for Science and Engineering Education by $4 million from other funds available to the Foundation. The Committee has taken this action to demonstrate its commitment to improving the quality of undergraduate educa-

tion and to acknowledge the important contribution of four-year colleges in the preparation of professional scientists and engineers. While the Committee has elected to give the Director broad discretion in making necessary transfers of funds from one or more programs or directorates to CSIP, the Committee stresses that this increase should not come from any other SEE program or activity.

Further, the Committee strongly believes that CSIP and the SEE Directorate should not be the sole sources of support for the scientific endeavors of four-year colleges. The Committee urges the Foundation to continue to emphasize support for undergraduate research and instrumentation by all of NSF's research directorates and anticipate that NSF's research directorates and anticipate that NSF will submit a comprehensive plan for the expansion and integration of support of undergraduate research throughout the Foundation in its FY 1988 budget.

The Committee is pleased that the Foundation's precollege program is approaching stability and the agency appears to be moving forward with the implementation of this legislation. The Committee expects that all available resources will be obligated in the course of this fiscal year. The Committee also commends NSF for its efforts to establish better linkages with the Department of Education, and encourages continued cooperation and coordination between these two agencies.

J. Special Foreign Currency (SFC).—The Committee recommends $700,000 for Special Foreign Currency, a decreae of $259,417 from the FY 1986 post sequester level. This decrease reflects the systemic use and depletion of available "excess currency," as controlled by the Treasury Department.

The Special Foreign Currency Program advances U.S. scientific and foreign relations goals by using local currency to support scientific cooperation. In FY 1987, resources will be used entirely for collaborative activities with Pakistan, with a focus on such critical areas as natural products chemistry, water resources engineering, Himalayan geology, materials science and metallurgy, and seismic studies. Cooperative research, seminars and scientific visits are supported.

K. Changes to the NSF Organic Act of 1950.—The bill would make four amendments to the National Science Foundation Act and related laws. All the proposed changes would serve a broad long-term purpose. They represent a continued collaboration between the Foundation and the congressional committees charged with oversight of its activities to simplify and streamline its organic legislation.

The first change is the deletion of the requirement that NSF maintain a register of scientific and engineering personnel. The number of scientists, engineers, and technicians in the United States made it impractical to keep an actual register of such individuals. (At present there are approximately four million scientists and engineers in the U.S. This is about eight times the number of such individuals in 1950.) NSF has instead focused its efforts on "the collection, interpretation, and analysis of data" which, in the Committee's opinion, responds to the original intent.

Second, existing language seems to require specific appropriations for scholarships and graduate fellowships. Congress has for

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many years chosen to appropriate for scholarships and fellowships in the Foundation's appropriation for Science and Engineering Education. Deleting this requirement removes a legal ambiguity and allows Congress greater flexibility in appropriating for such awards. That might, in turn, permit the Foundation to integrate some student support programs more effectively with its research support programs.

Third, the Committee has included an amendment that eliminates the statutory requirement for the Presidential appointment and Senate confirmation of four of NSF's assistant directors. The result of this amendment is to provide the Foundations director with the responsibility for the recruitment and selection of all of the NSF's assistant director positions.

The Committee notes that the 24-member National Science Board, which is responsible for making NSF policy, as well as the Director, and the Deputy Director, are all appointed by the President and confirmed by the Senate. These positions are considered to be the senior policy positions in the Foundation and thus the existing appointment process for these positions are considered to be senior management positions, responsible for implementing the policies established by the Congress, the President, the Science Advisor, the Board, and the Director and his deputy, the Committee does not believe it necessary that they be filled through the Presidential appointment process.

Finally, the Committee has recommended the repeal of Title IX of the National Defense Education Act of 1959 which required the Foundation to establish a "Science Information Service" and a "Science Information Council" to foster "a more effective dissemination of scientific information". The Council was terminated in 1975 by the Federal Advisory Committee Act, and NSF does not need the authority of Title IX to disseminate science information.

VI. Regulatory Impact

In accordance with paragraph (5)(a) of Rule XXIX of the Standing Rules of the Senate, the following statement of regulatory impact of S. 801 is made:

This measure represents a one year extension of existing NSF programs and activities and proposes specific levels of funding. There is no additional regulation anticipated as a result of the enactment of this legislation.

VII. CBO Budget Estimate

U.S. Congress,
Congressional Budget Office,
Washington, DC, June 3, 1986.

Hon. Orrin G. Hatch,
Chairman, Committee on Labor and Human Resources,
U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has prepared the attached cost estimate for S. 2184, the National Science Foundation Authorization Act for Fiscal Year 1987.

If you wish further details on this estimate, we will be pleased to provide them.

With best wishes,

Sincerely,

RUDOLPH G. PENNER, *Director.*

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

1. Bill number; S. 2184.

2. Bill title: National Science Foundation Authorization Act for Fiscal Year 1987.

3. Bill status: As amended and ordered reported by the Senate Committee on Labor and Human Resources, May 20, 1986.

4. Bill purpose: This bill authorizes the appropriation of $1,685.7 million in fiscal year 1987 to provide funding for the activities of the National Science Foundation (NSF). Of that total, $1,479 million is for research and related activities, $117 million is for the U.S. Antarctic Program, $89 million is for science and engineering education activities, and $0.7 million is for the Special Foreign Currency Fund. Additionally, the bill provides for the appointment of NSF assistant directors by the NSF director instead of the President. The bill also establishes an interagency task force on women, minorities, and the handicapped in science and technology.

NSF funding to date for fiscal year 1986 totals $1,458.3 million, after reductions required under the Balanced Budget and Emergency Deficit Control Act of 1985. The President has requested appropriations of $1,685.7 million for fiscal year 1987, the same amount as authorized in S. 2184.

5. Estimated cost to the Federal Government:

[By fiscal years, in millions of dollars]

	1987	1988	1989	1990	1991
Authorization level	1,685.7				
Estimated outlays	866.5	573.0	150.2	96.0	

Including outlays from previous year's appropriations, total 1987 outlays would be $1,598.9 million, assuming appropriation of the authorized amounts.

The costs of this bill fall within budget function 250.

Basis of estimate: This estimate assumes that all funds authorized will be appropriated and that spending will follow historical patterns.

The bill establishes an interagency task force on women, minorities, and the handicapped in science and technology. This is an expansion of an existing NSF task force. NSF believes that administrative assistance can be provided to the new task force at no significant additional cost.

6. Estimated cost to State and local governments: None.

7. Estimate comparison: None.

8. Previous CBO estimate: On May 28, 1986, CBO prepared a cost estimate for H.R. 4184, a similar bill ordered reported by the House Committee on Science and Technology. H.R. 4184 also authorized

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the appropriation of $1,685.7 million for NSF, although with different individual program levels. The estimated outlays of that bill are not significantly different from those of S. 2184. H.R. 4184 also reauthorized NSF indemnification of the Ocean Drilling Program, which increased the contingent liabilities of the federal government by an indeterminate amount. S. 2184 contains no such provision.

9. Estimate prepared by: Paul M. DiNardo.

10. Estimate approved by: James L. Blum, Assistant Director for Budget Analysis.

VIII. Changes in Existing Law Made by S. 2184

In accordance with the rule XXVI, paragraph 12, of the Standing Rules of the Senate, the following provides a print of the statute of the part of the section thereof to be amended or replaced (existing law proposed to be omitted is enclosed in brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

National Science Foundation Act of 1950

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FUNCTIONS OF THE FOUNDATION (42 U.S.C. § 1862)

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Sec. 3. (a) The Foundation is authorized and directed—

(1) to initiate and support basic scientific research and programs to strengthen scientific research potential and science education programs at all levels in the mathematical, physical, medical, biological, social, and other sciences, and to initiate and support research fundamental to the engineering process and programs to strengthen engineering research potential and engineering education programs at all levels in the various fields of engineering, by making contracts or other arrangements (including grants, loans, and other forms of assistance) to support such scientific, engineering and educational activities.

(2) to award, as provided in section 10, scholarships and graduate fellowships for study and research in the sciences or in engineering.

(3) to foster the interchange of scientific and engineering information among scientists and engineers in the United States and foreign countries;

(4) to foster and support the development and use of computer and other scientific and engineering methods and technologies, primarily for research and education in the sciences and engineering;

(5) to evaluate the status and needs of the various sciences and fields of engineering as evidenced by programs, projects, and studies undertaken by agencies of the Federal Government, by individuals, and by public and private research groups, employing by grant or contract such consulting services as it may deem necessary for the purpose of such evalua-

tions; and to take into consideration the results of such evaluations in correlating the research and educational programs undertaken or supported by the Foundation with programs, projects, and studies undertaken by agencies of the Federal Government, by individuals, and by public and private research groups;

[(6) to maintain a current register of scientific and engineering personnel, and in other ways to provide a central clearinghouse for the collection, interpretation, and analysis of data on the availability of, and the current and projected need for, scientific and engineering resources in the United States, and to provide a source of information for policy information by other agencies of the Federal Government; and]

"(6) to provide a central clearinghouse for the collection, interpretation, and analysis of data on scientific and engineering resources and to provide a source of information for policy formation by other agencies of the Federal Government;".

(7) to initiate and maintain a program for the determination of the total amount of money for scientific and engineering research, including money allocated for the construction of the facilities wherein such research is conducted, received by each educational institution and appropriate nonprofit organization in the United States, by grant, contract, or other arrangement from agencies of the Federal Government, and to report annually thereon to the President and the Congress.

(b) The Foundation is authorized to initiate and support specific scientific and engineering activities in connection with matters relating to international cooperation, national security, and the effects of scientific and engineering applications upon society by making contracts or other arrangements (including grants, loans, and other forms of assistance) for the conduct of such activities. When initiated or supported pursuant to requests made by any other Federal department or agency, including the Office of Technology Assessment, such activities shall be financed whenever feasible from funds transferred to the Foundation by the requesting official as provided in section 14(f), and any such activities shall be unclassified and shall be identified by the Foundation as being undertaken at the request of the appropriate official.

DEPUTY DIRECTOR AND ASSISTANT DIRECTORS (42 U.S.C. § 1864A)

SEC. 6. [(a)] There shall be a Deputy Director of the Foundation (referred to in this Act as the "Deputy Director") who shall be appointed by the President, by and with the advice and consent of the Senate. Before any person is appointed as Deputy Director, the President shall afford the Board and the Directors an opportunity to make recommendations to him with respect to such appointment. The Deputy Director shall receive basic pay at the rate provided for level III of the Executive Schedule under section 5314 of title 5, United States Code, and shall perform such duties and exercises such powers as the Director may prescribe. The Deputy Director shall act for, and exercise the powers of, the Director during the absence or disability of the Director or in the event of a vacancy in the office of the Director.

[(b) There shall be four Assistant Directors of the Foundation (each referred to in this Act as an "Assistant Director") who shall be appointed by the President, by and with the advice and consent of the Senate. Before any person is appointed as an Assistant Director, the President shall afford the Board and the Director an opportunity to make recommendations to him with respect to such appointment. Each Assistant Director shall receive basic pay at the rate provided for level V of the Executive Schedule under section 5316 of title 5, United States Code, and shall perform such duties and exercise such powers as the Director may prescribe.]

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EXECUTIVE COMMITTEE (42 U.S.C. § 1865)

SEC. 7. (a) There shall be an Executive Committee of the Board (referred to in this Act as the "Executive Committee"), which shall be composed of five members and shall exercise such powers and functions as may be delegated to it by the Board. Four of the members shall be elected as provided in subsection (b), and the Director ex officio shall be the fifth member and the chairman of the Executive Committee.

(b) At each of its annual meetings the Board shall elect two of its members as members of the Executive Committee, and the Executive Committee members so elected shall hold office for two years from the date of their election. Any person, other than the Director, who has been a member of the Executive Committee for six consecutive years shall thereafter be ineligible for service as a member thereof during the two-year period following the expiration of such sixth year. For the purposes of this subsection, the period between any two consecutive annual meetings of the Board shall be deemed to be one year.

(c) Any person elected as a member of the Executive Committee to fill a vacancy occurring prior to the expiration of the term for which his predecessor was elected shall be elected for the remainder of such term.

(d) The Executive Committee shall render an annual report to the Board, and such other reports as it may deem necessary, summarizing its activities and making such recommendations as it may deem appropriate. Minority views and recommendations, if any, of members of the Executive Committee shall be included in such reports.

DIVISIONS WITHIN THE FOUNDATION (42 U.S.C. § 1866)

SEC. 8. There shall be within the Foundation such Divisions as the Director, in consultation with the Board, may from time to time determine.

SPECIAL COMMISSIONS (42 U.S.C. § 1868)

SEC. 9. (a) Each special commission established under section 4(h) shall be appointed by the Board and shall consist of such members as the Board considers appropriate.

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(b) Special commissions may be established to study and make recommendations to the Foundation on issues relating to research and education in science and engineering.

SCHOLARSHIPS AND GRADUATE FELLOWSHIPS (42 U.S.C. § 1869)

SEC. 10. The Foundation is authorized to award, [within the limits of funds made available specifically for such purpose pursuant to section 16,] scholarships and graduate fellowships for study and research in the sciences or in engineering at appropriate nonprofit American or nonprofit foreign institutions selected by the recipient of such aid, for stated periods of time. Persons shall be selected for such scholarships and fellowships from among citizens or nationals of the United States, and such selections shall be made solely on the basis of ability; but in any case in which two or more applicants for scholarships or fellowships, as the case may be, are deemed by the Foundation to be possessed of substantially equal ability, and there

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SECTION IV

(PUBLIC LAW 864—85TH CONGRESS)

[TITLE IX—SCIENCE INFORMATION SERVICE

[FUNCTIONS OF THE SERVICE (42 U.S.C. § 1876)

[SEC. 901. The National Science Foundation shall establish a Science Information Service. The Foundation, through such Service, shall (1) provide, or arrange for the provision of, indexing, abstracting, translating, and other services leading to a more effective dissemination of scientific information, and (2) undertake programs to develop new or improved methods, including mechanized systems, for making scientic information available.

[SCIENCE INFORMATION COUNCIL (42 U.S.C. § 1877)

[SEC. 902. (a) The National Scientific Foundation shall establish in the Foundation, a Science Information Council [6] (hereafter in this title referred to as the "Council") consisting of the Librarian of Congress, the director of the National Library of Medicine, the director of the Department of Agriculture library, and the head of the Science Information Service, each of whom shall be ex officio members, and fifteen members appointed by the Director of the National Science Foundation. The Council shall annually elect one of the appointed members to serve as chairman until the next election. Six of the appointed members shall be leaders in the fields of fundamental science, six shall be leaders in the fields of librarianship of scientific documentation, and three shall be outstanding representatives of the lay public who have demonstrated interest in the problems of communication. Each appointed member of such

[6] The Federal Advisory Committee Act, 5 U.S.C. App. I, terminated the Science Information Council on January 5, 1975.

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Council shall hold office for a term of four years, except that (1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed only for the remainder of such term, and (2) that of the members first appointed, four shall hold office for a term of three years, four shall hold office for a term of two years, and three shall hold office for a term of one year, as designated by the Director of the National Science Foundation at the time of appointment. No appointed member of the Council shall be eligible for reappointment until a year has elapsed since the end of his preceding term.

[(b) It shall be the duty of the Council to advise, to consult with, and to make recommendations to, the head of the Science Information Service. The Council shall meet at least twice each year, and at such other times as the majority thereof deems appropriate.

[(c) Persons appointed to the Council shall, while serving on business of the Council, receive compensation at rates fixed by the National Science Foundation, but not to exceed $100 per day and shall also be entitled to receive an allowance for actual and necessary travel and subsistence expenses while so serving away from their places of residence.

[AUTHORITY FOR CERTAIN GRANTS AND CONTRACTS (42 U.S.C. § 1878)

[SEC. 903. In carrying out its functions under this title, the National Science Foundation shall have the same power and authority it has under the National Science Foundation Act of 1950 to carry out its functions under that Act.

[APPROPRIATIONS AUTHORIZED (42 U.S.C. § 1879)

[SEC. 904. There are hereby authorized to be appropriated for the fiscal year ending June 30, 1959, and for each succeeding fiscal year, such sums as may be necessary to carry out the provisions of this title]

IX. COMMITTEE ACTION

The Committee on Labor and Human Resources met on May 20, 1986, to consider the S. 2184, a bill to authorize appropriations for the National Science Foundation for fiscal year 1987. The Committee adopted the following amendments by voice vote:

1. An amendment by Mr. Hatch to change the directorate names and amounts to correspond with NSF's new administrative structure and to establish an inter-agency task force on women, minorities, and the handicapped in science and engineering;

2. An amendment by Mr. Kennedy to amend the NSF Organic Act of 1950 deleting the requirement that four of the Foundation's assistant directors by Presidentially appointed and subject to Senate confirmation;

3. An amendment by Mr. Dodd requiring the Director to transfer $4 million to the Science and Engineering Education Directorate for the College Science Instrumentation program from funds available to the Foundation; and

4. An amendment by Mr. Simon requiring the Director to transfer $3 million to the Biological and Behavioral Sciences Directorate

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for behavioral and social sciences from funds available to the Foundation.

The Committee subsequently ordered the bill, S. 2184, as amended, favorably reported by voice vote.

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